



Much like you might break up a building into its smallest part, revealing what the building is made of, scientists have worked to discover what all things are made of. The stuff that makes up all things is called **matter**. Matter is **defined** as anything which takes up space and has mass.

How can you prove that a solid object takes up space?

Place it in a container full of water and watch the water spill over the top of the bucket!

Now use a balance beam scale to measure its mass.

Is the object made of matter?



Scientists often make observations about matter using the amount of space it takes up and its mass. This will tell you the density of the object.

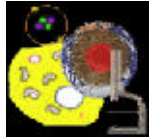


- Take any three objects and use a balance beam to measure then record the mass of each. (Remember that mass is measured in grams.)
- Now use a container that has markings on the side to record volume (such as a beaker - remember that scientists measure volume in either liters or milliliters).
  - Fill the container up with water.
  - Insert the object you just obtained the mass of.
  - After the water spills out of the container, remove the object and note how much the volume of water went down.
  - The difference between how much water was in the container when it was full and how much is in it now is the volume of the object.
- Use simple division (mass/volume) to determine the density of the object.
- Continue on with the other two objects.



1. Do they all have the same mass?
2. Do they all have the same volume?
3. How does their density compare?
4. Based on your observations, what can you conclude about the relationship between mass and volume?

Remember the formula is: **Density = mass/volume.**



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